THE Maple Leaf / LA Feuille d'érable

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Canadian Armed Forces SMALL ARMS COMPETITION

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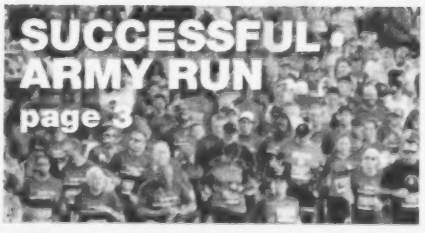

SUCCESSFUL ARMY RUN

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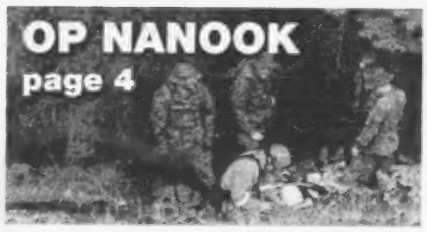

OP NANOOK

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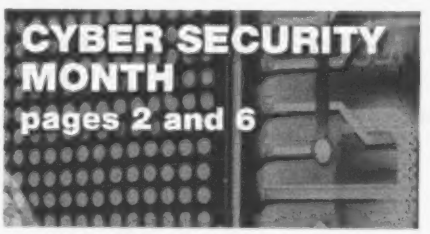

CYBER SECURITY MONTH

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National Defence / Défense nationale

Canada

ARE YOU TAKING TOO MANY RISKS WHEN IT COMES TO DEFENCE CYBER SECURITY?

A message from the
Defence Chief Information Officer
and the ***Departmental Security Officer***

Len Bastien, Assistant Deputy Minister (Information Management) and Defence Chief Information Officer (left), and BGen Louis Meloche, Director General Defence Security and Departmental Security Officer.

We live in a cyber world. The prevalence of social media, our dependence on electronic banking, and our hunger for instant information and messaging are all indicative of the increasingly important role that cyber-based technologies play in our daily lives.

Canadians are especially tech savvy and continue to embrace everything cyber. According to information released by Public Safety Canada in August 2016: "Canada has more computers per capita than any other country (129 devices per 100 people) and Canadians are the heaviest Internet users in the world, spending more than 40 hours online per person, per month."

Within the Defence Team we see this trend and the overall cyber world through a special lens, dictated by our critical role of defending Canada and Canadians.

We anticipate the devastating impact that attacks on Canadian cyber assets could have on our nation's infrastructure – such as energy sources, air traffic, hospitals, or emergency services – and prepare to protect Canadians in such an environment.

We embrace and evolve the capabilities that cyber-based technologies bring to our daily business and our military operations, such as secure networks and communications, or efficient command and control of resources.

We actively defend our cyber domain against those who would infiltrate our systems with malicious intent, whether to extract the valuable and sensitive information they contain, destroy critical capabilities, or sabotage military operations.

The cyber domain must be defended everywhere because unlike the more traditional land, sea, and air operational environments, it has no physical boundaries. It comprises the computer at our desk, the mobile device in our hand, the databases we maintain, the documents we manipulate, and the email conversations we have, to name a few.

At DND and the CAF, our information holdings, systems, and IT assets are protected by layered defences, the details of which are – understandably – classified. It is a fact that these defences work together to thwart direct cyber attacks every day.

As an organization, Defence is acutely aware of the need for vigilance in the cyber domain, but as individuals we continue to take risks with the security of our systems, our assets, and even our collective safety.

Protecting the security of Defence systems is the responsibility of every member of the Defence Team. This Cyber Security Awareness Month, take the opportunity to assess your IT security practices, review applicable IT and IS security orders and directives, and consult your Information System Security Officer if you have any questions. We all have our part to play in defending against cyber threats. ♣

Len Bastien
ADM(IM),
Defence Chief Information Officer

BGen Louis Meloche
Director General Defence Security,
Departmental Security Officer

FOR EXAMPLE, HAVE YOU EVER...

- Plugged in your portable digital media player into your work computer, just once, because you forgot your charger at home?
- Written your DWAN password on a piece of paper under your keyboard, because you might forget it?
- Opened a Level II-classified (Secret) document on your DWAN computer for a few minutes to make a small edit?
- Failed to turn off your mobile device in a wireless-free zone, because you were expecting an important call?

These actions are security violations, and for good reason. In the worst cases, they can enable data leakage, compromise network defences, and cause network outages. They can also have serious repercussions for Defence Team members as individuals because these violations can ultimately lead to the suspension or revocation of account privileges.

CHANGES TO VETERANS' INCOME SUPPORT BENEFITS

The ongoing care, support, and well-being of ill and injured CAF members, veterans, and their families is a high priority for the CAF, DND, Veterans Affairs Canada (VAC), and the Government of Canada. Whether our personnel are on the road to recovery, rehabilitation, returning to military duty, or transitioning to civilian life, the CAF is dedicated to assisting them through their challenging journey.

All CAF members need to be aware of changes to VAC income support benefits that took effect on October 1, as many personnel have questions about what this means for them and how they can apply to receive such benefits. This change affects all veterans as well as ill and injured CAF members who may be medically released in the future.

CHANGES TO EARNINGS LOSS BENEFIT

As announced in Budget 2016, funding for income support benefits for veterans in VAC's Earnings Loss Benefit (ELB) program will be raised from 75 to 90 per cent of a veteran's pre-release salary. Additionally, the benefit will be indexed so that it keeps pace with inflation. While VAC's ELB income support benefits will increase, it is important to note that CAF Long Term Disability (LTD) benefits will not. It will remain at 75 per cent of a veteran's pre-release salary and existing benefits will not be affected. Therefore, in order to be considered for the additional benefit, people must apply to VAC.

Note that the Service Income Security Insurance Plan (SISIP) administers the CAF LTD policy on behalf of the Chief of the Defence Staff, and Manulife is the insurer. As the employer sponsored group disability plan, CAF LTD is first payer for benefits and remains among the best LTD plans offered in the country.

APPLY TO VAC

Veterans or those medically released from the CAF in the future are encouraged to apply to VAC to participate in their rehabilitation program, a precondition for ELB eligibility. A veteran can receive an application by calling VAC at 1-866-522-2122 (toll-free) Monday to Friday, 8:30 a.m to 4:30 p.m. local time, by visiting the VAC ELB webpage and downloading the application form, by logging into their My VAC Account, or by visiting their local VAC Area Office.

All CAF members are strongly encouraged to learn more about the range of care, compensation, and financial benefits available to them so that they can make informed decisions about what benefits plan or program will best support them and their family's needs upon being released.

DND, the CAF, and VAC are committed to simplifying and consolidating the system of care, compensation, and financial benefits that are available to veterans and their families. The CAF and VAC continue to work together and with veterans to address gaps in service as outlined in the public, written direction the Minister of Veterans Affairs and the Defence Minister have received from the Prime Minister.

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Submissions from all members of the CAF and civilian employees of DND are welcome; submission guidelines can be found on the Defence Team intranet. Articles may be reproduced, in whole or in part, on condition that appropriate credit is given to *The Maple Leaf* and, where applicable, to the writer and/or photographer.

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COVER:
Canadian Rangers participate in the Canadian Armed Forces Small Arms Competition, which was held at Connaught Ranges in Ottawa.
PHOTO: Cpl Nathan Moulton

ANOTHER SUCCESSFUL CANADA ARMY RUN

The start of the Army Run 5K on September 18.

More than 23 000 people of all ages, including active and retired CAF members, ran, walked, and rolled through the streets of Ottawa on September 18 for the 9th annual Canada Army Run.

"Members of the Canadian Armed Forces make sacrifices every day to keep our country safe whether at home or abroad, and the incredible amount of support we receive from Canadians is quite humbling," said Lieutenant-General Paul Wynnyk, commander of the Canadian Army.

Also of note, over 2000 people took part in the new Commander's Challenge at this year's event.

LGen Wynnyk, also an avid runner who values fitness, had challenged anyone to run both the 5K and half-marathon.

Since 2008, the Canada Army Run has raised more than $1.6 million in support of Soldier On and the Military Families Fund – two CAF financial support programs that provide assistance to ill and injured soldiers and military families in need.

Next year's event is scheduled for September 17. A 10K run will be added to the 2017 line-up to mark the 10th anniversary of the Army Run, which coincides with Canada's 150th birthday and the 100th anniversary of the Battle of Vimy Ridge.

PHOTO: marathon-photo.com

Our next two ***"60 Seconds With..."*** *videos put pressure on leaders to answer as many questions as they can in a minute.*

Watch these and future videos at: **intranet.mil.ca** or watch for them on the Canadian Armed Forces Facebook, Twitter, and YouTube channels.

We recently challenged Assistant Deputy Minister (Finance) / Chief Financial Officer Claude Rochette to talk about his role as Champion of the 2016 National Defence Workplace Charitable Campaign.

Next up is Dr. Marc Fortin, Chief Executive Officer and Assistant Deputy Minister (Science and Technology). What does he fear?

Hint: He shares the same view as former US President Franklin D. Roosevelt.

SAFE Drinking Water

PHOTO: Cpl Jay Ham

Preventive medicine technician Sgt Leanne O'Connell checks the alkalinity (Ph) levels of a water sample to ensure the safety of the main water supply at Camp Albertsof, Germany, during Op REASSURANCE.

BOARDING PARTY FINE TUNES SKILLS in Greece

Members of Team Thresher, the third team from Maritime Tactical Operations Group (MTOG) on Op REASSURANCE, conducted training in Crete, Greece, to hone their boarding skills.

The team specializes in maritime interdiction operations and this was an opportunity to broaden and fine-tune their boarding skills at the NATO Maritime Interdiction Operational Training Centre. This training included rappelling, insertion and extraction techniques, close quarter battle, hand-to-hand combat, boarding psychology, and full-scale boardings of the training ships *Aris* and *Alkyon*.

CAF members forged working relationships with the Swedish Boarding and Recovery Troop, the German boarding team, and various NATO members.

The training centre provides a unique environment for MTOG as the facilities can be tailored for each team's training, and allowed MTOG teams to be forward deployed within an operational area and still be within arm's reach of the ship.

MTOG teams conducted advanced training alongside other nations, building a network which enhances Canada's capabilities during international missions. The ability to share techniques and tactics between teams improves the maritime interdiction operations capabilities for everyone involved.

Team Thresher is aboard HMCS *Charlottetown* on Operation REASSURANCE as the Enhanced Naval Boarding Party.

This fall, Team Thresher will participate in Exercise JOINT WARRIOR, and conduct boarding exercises alongside NATO and partner states' assets, further building interoperability.

CAF members of Team Thresher on final exercise at the NATO Maritime Interdiction Operational Training Centre in Greece.

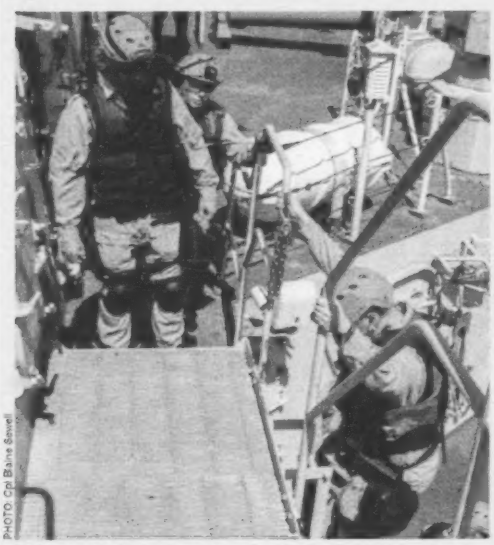
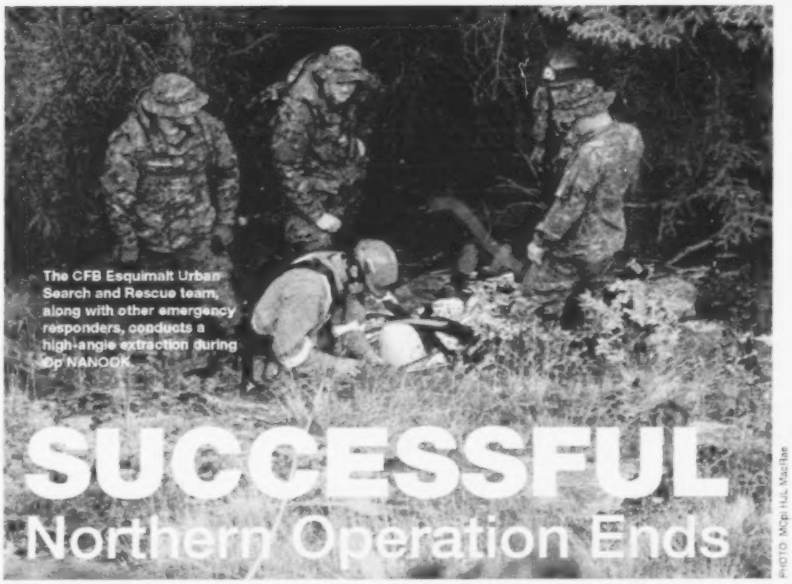


PHOTO: Cpl Blaine Sewell

HMCS *Charlottetown*'s Naval Boarding Party prepares to conduct a co-operative boarding of Motor Vessel *Byblos* during Op REASSURANCE in the Mediterranean Sea.



The CFB Esquimalt Urban Search and Rescue team, along with other emergency responders, conducts a high-angle extraction during Op NANOOK.

PHOTO: MCpl Hal MacRae

SUCCESSFUL Northern Operation Ends

The best-known of all the Arctic operations in Canada's North, Operation NANOOK, ended September 2.

The operation included about 850 military and civilian personnel working over two weeks on a simulated earthquake response in Whitehorse and Haines Junction, Yukon, and various security exercises in Rankin Inlet, Nunavut.

A high-angle extraction, featuring a simulated injured hiker, stretcher, ropes, and several search and rescue (SAR) teams working together on a steep rock incline, was one of the main interests for Defence Minister Harjit Sajjan during his visit to Haines Junction on the last day of the operation.

Currently tasked as the part of the Canadian Army Immediate Response Unit, members of 12e Régiment blindé du Canada, Valcartier, featured prominently in the staged tasks. Working with the Royal Canadian Navy, the Canadian Rangers, military and civilian SAR teams, RCMP, and several other Northern agencies, they practiced skills such as mass casualty response and rapid damage assessment.

"The Champagne and Aishihik First Nations, and the Whitehorse and Haines Junction communities were fabulous hosts," says Lieutenant-Colonel Eric Landry, commander Task Force Yukon. "We received a warm welcome here, a beautiful location that perfectly fit our earthquake scenario because it sits on a fault line."

The Canadian Rangers' contribution was critical to this year's operation, teaching troops survival skills and guiding them through the land. RCAF aircraft transported troops and enabled a helocasting exercise, with Navy divers jumping from an aircraft in quick response to a simulated air crash. The simulated response turned to reality when CH-146 Griffon helicopter crews from the Edmonton-based 408 Tactical Helicopter Squadron successfully conducted a real SAR of stranded Alaskan kayakers.

The powerful earthquakes in Italy and Myanmar on August 24 were another reminder of why this training is so important. Although the CAF's assistance was not needed for either of these events, in April 2015 the CAF Disaster Assistance Response Team deployed for a month following the catastrophic earthquake in Katmandu, Nepal.

Op NANOOK will have a lasting impact on the community of Haines Junction as well. The 5 Combat Engineer Regiment, Valcartier, has left behind the St. Elias Trail legacy project, and the new path is a vast improvement over the old one that local children use to walk to school. Throughout the operation, the 5 CER oversaw the project, from clearing trees to the ribbon-cutting event, which saw community leaders and locals of all ages try out the new trail for the first time.

The R22eR, also part of the Army's Immediate Response Unit and the Arctic Response Company Group, deployed to Rankin Inlet to focus on security operations and practice military patrols and armed reconnaissance. The security operation involved the Army, Navy, and Air Force working together to retrieve sensitive components from an unmanned aerial vehicle (UAV) crash site before CAF members acting as a non-friendly and non-specific nation.

The scenario also allowed members of the 2nd Canadian Division to work with members from the 1st Canadian Ranger Patrol Group, which provides monitoring capabilities across the Arctic. The Rangers conducted specialized joint field training for members from all three elements, allowing members to hone their Arctic survival skills. Commonly referred to as Canada's "eyes and ears in the North," this group of dedicated members, many of whom serve as leaders in their own Northern communities, facilitates the efficacy and success of CAF operations in the North.

> *"This exercise is extremely important as it is critical that we know how to work quickly when something happens."*
>
> —BGen Mike Nixon, commander of Joint Task Force North

"The CAF activity in Rankin Inlet marked an important milestone in joint operations," says Lieutenant-Commander Terence Cross, Task Force Nunavut commanding officer. "The Air Force, Navy, and Army working together on an amphibious operation is a stepping stone to future northern operational deployments in preparation for the capabilities the Arctic Offshore Patrol Ships will have."

Her Majesty's Canadian Ships *Moncton* and *Shawinigan* played a big role in the amphibious insertion and extraction of elements of R22eR at Rankin Inlet.

The CAF contribution to the community was through the Boomer's Legacy Foundation, which donated $10 000 to the Rankin Inlet School Breakfast Fund at one of the schools in the hamlet. Medical personnel from Task Force Nunavut gave a nutrition briefing at the school.

"This exercise is extremely important as it is critical that we know how to work quickly when something happens," says Brigadier-General Mike Nixon, commander of Joint Task Force North. "Operation NANOOK 2016 met the goals we set. The CAF trained with federal, territorial, and municipal partners to ensure safety and security in Canada's North should an incident occur, whether it is protecting Canada's sovereignty or responding to a natural disaster."

COMPETITION GATHERS TOP SHOOTERS FROM ACROSS THE GLOBE

The Canadian Army hosted this year's Canadian Armed Forces Small Arms Concentration (CAFSAC) with more than 300 participants competing in tactical close-fire scenarios and long-distance endurance events.

For the first time, a team from the Royal Military College of Canada joined the 21 teams from the United Kingdom, the United States, Canadian Army, Royal Canadian Navy, Royal Canadian Air Force, and Canadian Rangers as they gathered at Connaught Ranges in Ottawa from September 5 to 17.

"We took current operations and developed dynamic ranges that went beyond traditional matches," said Lieutenant-Colonel Chris Comeau, CAFSAC director. "Participants encountered scenarios where they had to mix their skills as marksmen with realistic challenges that come with battle, including protecting civilians, rescuing injured forces, and overcoming obstacles."

The Queen's Medal for Champion Shot was the top prize, and awarded to Regular Force member Major Ken Barling from 435 Squadron, 17 Wing Winnipeg, and Reserve Force member Corporal Dave Ferguson from 1st Battalion, The Nova Scotia Highlanders. The top prize for Canadian Rangers, the Capt Shannon Wills QM1 Trophy, was awarded to Ranger Mustafa Dedeci from 2nd Canadian Ranger Patrol Group. These three each had the highest aggregate scores over a series of qualifying rifle matches.

Individual and team prizes were awarded to additional top shooters. The Top Shots on Pistol were awarded to Regular Force member Cpl Robert Wright from 1st Battalion, Princess Patricia's Canadian Light Infantry and Reserve Force member Cpl Matt Valcour from the Governor General's Foot Guards. The two trophies for Top 12 member teams were both awarded to 2nd Canadian Division teams, the Regular Force receiving the Letson Trophy and the Reserves receiving the Clarence R. Smith Trophy. Canadian Rangers from all five patrol groups had an opportunity to connect with fellow Rangers, compete internationally, and explore new cultures and experiences. Many Rangers travelled from locations in the North West Territories, Nunavut, and Yukon.

"This year's Canadian Armed Forces Small Arms Concentration shooters and staff were excellent," said LCol Comeau. "They worked hard, shared expertise, and gained relevant experiences that will benefit their unit's marksmanship skills and mission readiness. We hope to build on our successes from this year to make next year's concentration even stronger." ◆

PHOTO: Cpl Nathan Moulton

US Army National Guard members cross the finish line of a military biathlon event at the CAFSAC held at the Connaught Ranges, Ottawa, Ont.

PHOTO: Sgt Kenneth Gosselin

Junior Canadian Rangers COMPLETE TRAINING

A group of Junior Canadian Rangers from Fort Severn, Ont., completed an unusual two-day, on-the-land training session. The Rangers travelled about 120 km by all-terrain vehicles from the small Cree settlement to camp out above the tree line on the shore of Hudson Bay.

Exercise hones interrogation SKILLS

A heavy door closes, plunging a tiny four square metre room into deafening silence.

There are two chairs in this closet-like space. On one is seated an interrogator, on the other a detainee who is trying to avoid eye contact.

The man appears stressed out, no doubt because he has just been arrested by coalition forces after being found with his brother near the scene of an attack on a convoy.

The interrogator wants to know why the young shepherd was near the site of the explosion. The detainee is trying to protect himself and his brother, hoping to keep them out of trouble, but the interrogator quickly identifies the shepherd's concerns and manages to reassure the man and gain his confidence.

In only a few hours, the Canadian military intelligence officer obtains the name of a potential recruiter for an insurgent group, learns how he works, and finds out about the threat he represents.

A simple talk with the detainee yields all this information. The gatherer immediately drafts his report and submits it to higher echelons. Then, drawing upon the information, an analyst at the brigade level determines the extent of the enemy network.

That is a scenario similar to those making up Exercise PANTHER STRIKE, attended for a second consecutive year by a small team of Joint Task Force X (JTF X) interrogators at Camp Williams, Utah.

JTFX members had an opportunity to improve interoperability among Canadian human source information gatherers and their American counterparts. It was against this backdrop that Corporal Mathieu Charest-Durand of 4 Intelligence Company was able to practice his briefing skills in front of American staff.

"I briefed command on the proper placement of electronic and human sensors on the ground based on the gathered intelligence," he noted.

PANTHER STRIKE enabled 33 reservists from the Intelligence Companies of 21 Electronic Warfare Squadron (21 EW Sqn) and JTF X to see the crucial importance of co-operation in anticipating, identifying, and defeating the threat. During the exercise, 21 EW Sqn was tasked with gathering information on the enemy. Members travelled to one of the hills in the training area of Camp Williams aboard a US Blackhawk helicopter. From there they were able to obtain and relay information on the adversary—the end to another successful scenario.

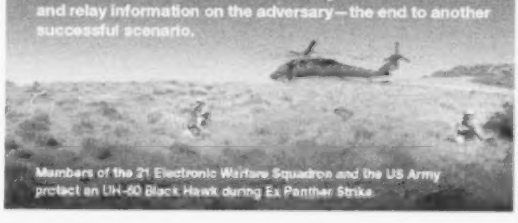


PHOTO: 21 EW Sqn

Members of the 21 Electronic Warfare Squadron and the US Army protect an UH-60 Black Hawk during Ex Panther Strike.

CYBER SECURITY AWARENESS MONTH

What Defence Team members need to know...

PASSWORDS are the key to access computer systems and authenticate your identity within a system. Cracking and guessing passwords are popular techniques for gaining unauthorized system access. To protect yourself:

- Pick a strong password that uses a combination of letters, numbers, special characters, and both upper- and lower-case characters;
- Change your password every 60 to 90 days; and
- Don't use single words, or words and numbers associated with yourself (such as names of pets, birthdates, licence plate numbers, etc.).

PHISHING is the act of sending an e-mail or text that usually contains a link to an authentic-looking fake website, on which users are tricked into disclosing personal information. To protect yourself:

- Question any e-mail that looks suspicious, such as e-mails that instill a sense of urgency, contain spelling errors, or link to an IP address (numbers) instead of a name;
- Do not follow links in unexpected e-mails; and
- Only enter personal information on secure websites containing "https://" ahead of the URL and a visible lock icon in the bottom status bar.

MALWARE, which includes **SPYWARE** and **ADWARE**, are used by third parties to infiltrate systems, collect information, and perform operations invisible to the user. While DND and CAF systems have layered defences against malware, you can do the following for added protection:

- Create strong passwords, and choose a different one for every system;
- Ensure your computer or laptop has the latest software by accepting updates as soon as possible and rebooting your system; and
- Report any odd computer behaviour, such as unusually slow computer responses.

SOCIAL MEDIA PLATFORMS such as Facebook, Twitter, and Instagram are convenient for sharing news and imagery, but they can also provide valuable personal and professional information that can be used by foreign analysts to conduct social engineering attacks on Defence Team personnel. To protect yourself:

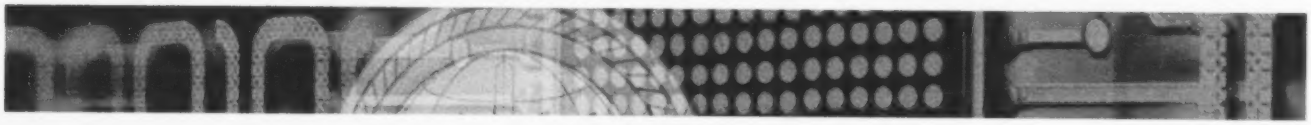
- Use your privacy settings to control access to your information on social media;
- Report any attempt to coerce information on your duties, work, or military status to your chain of command;
- Ensure any Defence-related information you share is already in the public domain; and
- Avoid sharing personal information like birth dates, the names of your children, or the location of your work or residence.

GEO-TAGGING is the process of adding geographical information to various media such as photographs, messages, websites, or social media posts. Geotags can expose where you live and travel, your routines, and – in the Defence context – where you operate. To protect yourself:

- Consider the risk to yourself, your family, and the Defence Team before geotagging information; and
- Do not allow applications to access your physical location by GPS.

CYBER ESPIONAGE is the practice of using illegal exploitation methods on Internet, networks, software, or computers to obtain sensitive information for military, political, or economic advantage. Cyber espionage is a real threat to the Defence Team. To protect yourself:

- Be vigilant against malware and phishing attempts;
- Respect the wireless-free policies within your workspace;
- Use encryption software when transmitting protected data electronically, and secure networks for secret information; and
- Report any suspicious incidents (such as unsolicited and phishing emails) to your Information System Security Officer.



To read the full stories, go to cfmws.com, click on PSP, and then the Newspapers button.

CFS ALERT TAKES THE POLAR BEAR PLUNGE

8 WING TRENTON

Canadian Forces Station Alert personnel held a Polar Bear Dip at the Lincoln Sea. The Hawaiian-themed event was a refreshing opportunity for station personnel to get outdoors and enjoy the Arctic Ocean.

—*Contact*

Participants entering the water at CFS Alert.

8 WING HERITAGE PARK PROVIDES ENDURING HISTORICAL PERSPECTIVE

8 WING TRENTON

The enduring legacy of 8 Wing/CFB Trenton, now well documented in the 8 Wing Heritage Park, was officially opened by 8 Wing Commander Colonel Colin Keiver.

This spectacular new park in front of the Officers' Mess replaces an eyesore Col Keiver referred to in his opening remarks as "a pit of despair," a former sunken garden ravaged by time and neglect.

—*Contact*

PHOTO: Ross Lees

Plaques located in the 8 Wing Heritage Park speak to significant historical events related to 8 Wing/CFB Trenton.

10 FTTS CONDUCTS TRAINING WITH US NAVY AND SWISS ENGINEERS

4 WING COLD LAKE

10 Field Technical Training Squadron (10 FTTS) recently hosted a group of engineers for F-18 specialized landing gear training.

The group included F-18 Hornet fleet-specific US Navy and Swiss engineers who gained two weeks of hands-on exposure to various landing gear systems. This is the second year the USN engineers from NAVAIR at North Island in San Diego, California, participated, and the first time for the Swiss. The visit gave them practical experience they are unable to get in their working environments.

—*The Courier*

PHOTO: Dpl Sp Cpl

Visiting engineers perform main landing gear door rigging.

HMCS *OTTAWA* RESCUES CREW ON BURNING VESSEL

CFB ESQUIMALT

Two men stranded on a burning fishing vessel are now on dry land thanks to the crew of HMCS *Ottawa*.

The 12-metre fishing vessel *Sherry C* was towing another disabled fishing vessel when fire broke out in *Sherry C*'s engine room. *Ottawa* responded to the Mayday call and proceeded at best speed to both disabled vessels.

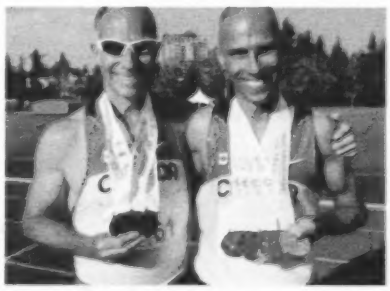
—*Lookout*

GOLD – AND MORE – FOR RCAF RUNNING BROTHERS

14 WING GREENWOOD

After competing all summer on the Nova Scotia and Ontario track and field circuits against athletes half their age, Chief Warrant Officer Claude Faucher from 413 Transport and Rescue Squadron, Greenwood, and his brother, Major Serge Faucher from NDHQ, Ottawa, competed at the first Americas Masters Games in Vancouver. More than 5000 veteran athletes from 52 countries gathered to participate in 22 different sports August 26 to September 4.

—*The Aurora*



Brothers Maj Serge Faucher (left), NDHQ, and CWO Claude Faucher, 413 Transport and Rescue Squadron, Greenwood, show off their Americas Masters Games running hardware.

A RESOUNDING SUCCESS

CFB VALCARTIER

With the sun shining and warm weather, almost 10 000 visitors flocked to CFB Valcartier recently to participate in the open house day – a big family gathering.

With the exception of the summer of 2014 when the base opened its doors to the public to celebrate its 100th anniversary, no other event of this magnitude has happened at Valcartier since 1997. The end of Expo Québec offered great visibility to the CAF in the region, leading to the decision to bring back open house days.

—*Adsum*

EXTENSIVE CONSTRUCTION WORK AT SAINT-HUBERT

SAINT-HUBERT

The $55.2 million investment announcement on August 19 will primarily benefit the Saint-Hubert site, where a new drill hall will be constructed for 34 Canadian Brigade Group, a mission element from the Régiment de Maisonneuve, a military police platoon, and 34 Service Battalion.

—*Servir*

Capt Antoine Labranche (second from left) and his mountaineering group fly the 438 Tactical Helicopter Squadron colours on Mount Eiger.

PHOTO: Capt Antoine Labranche

CAF pilot CONQUERS NEW PEAKS

Canadian Armed Forces members are known to be proud of their jobs, but one CH-146 Griffon pilot is taking this notion to new heights.

Captain Antoine Labranche, a pilot with 438 Tactical Helicopter Squadron (438 Tac Hel Sqn) and seasoned mountaineer, has just conquered three legendary peaks in Europe: Mont Blanc in France, the Matterhorn in Italy, and the Liger in Switzerland.

"I want to make use of this trip to carry the 438 Tac Hel Sqn colours to these three peaks," said Capt Labranche, before setting out on his climbing feat. "To me, the image of the squadron colours on these legendary mountains represents the step the unit has taken in changing its leadership and assuming new duties."

Capt Labranche's squadron recently surmounted its own challenges in taking on two new flights and a new commanding officer. These changes went ahead thanks to considerable effort and adaption to both knowledge and personnel training.

Capt Labranche, who grew up in Stanbridge East, Que., does not hesitate to point out the relationship between his conquest of the three peaks and his career as a pilot.

"The mental and physical abilities needed to conduct operations and climb mountains characterize both the vision of the Royal Canadian Air Force and my mountaineering activities. One passion feeds the other."

As far as staying in shape is concerned, Capt Labranche adapts his fitness exercises to the summits to be reached. Cardiovascular training always has an important place in his physical activity regimen both in garrison and on deployment, even if this means taking his morning jog in a former Cold War facility in Greenland, as he did during Operation NEVUS 16.

Capt Labranche's expedition in the Alps does not mark the end of his climbing experiences. He is already planning to conquer Alpamayo and Huascarán in Peru, and Illimani, Huayna Potosi, and Sajama in Bolivia. ♣

22 PUSH UPS from RMCC

PHOTO: CFB Kingston

Royal Military College of Canada held a campus-wide 22 Push-up Challenge on the parade square September 9. The social media movement was originally designed to bring awareness to the average number of 22 American veterans who commit suicide every day, and to get people to think about mental health amongst international veterans, first responders, and members of the military.

KEEPING THE DEFENCE TEAM HEALTHY

ASK THE EXPERT

IN-LINE SKATING IS A GOOD ALTERNATIVE TO RUNNING

Q: I have been running regularly for over 20 years and I now find that if I run more than two days in a row my hips get sore. I am considering in-line skating several days a week to see if this reduces the impact on my body. My problem is that in-line skating looks almost effortless and I am concerned that while it may be better for my ageing joints, it will offer little in terms of fitness benefits. How do running and in-line skating compare in terms of fitness benefits?

—Jonathon

A: Dear Jonathon,

Congratulations on leading by example in terms of your long-term commitment to living an active lifestyle. Whether you are trying to reduce the impact load on your body or just looking to change up your training routine, research shows in-line skating has a lot to offer in terms fitness benefits. Let's compare in-line skating and running using five criteria:

- **Calories burned** – Studies show rollerblading at a steady pace will burn approximately 528 calorie/hour while running at a comfortable pace burns approximately 720 calories/hour. Skating faster, skating uphill, and doing intervals can increase your calorie burning to over 900 calories/hour. Not too shabby!
- **Aerobic fitness** – Running provides greater aerobic fitness gains than in-line skating. This is because you can coast on in-line skates, but you can't coast while running. In-line skating has been shown, however, to be better for aerobic fitness development than cycling.
- **Muscle building** – The body motion required to in-line skate provides a more complete muscle building workout than running and if you swing your arms vigorously the benefits are even greater. In-line skating truly can provide a great lower body, core, and upper body workout.
- **Impact** – In-line skating subjects your body to 50 per cent less impact force than running. This is a significant benefit especially for people who are ageing and have some wear and tear on their knees, hips, and backs.
- **Core strengthening** – In-line skating requires more balance and coordination than running, and this will definitely help strengthen your core musculature.

The bottom line is that in-line skating is an excellent lower impact exercise alternative. Regardless of how skilled you are, remember to wear a helmet when you do this sport, and other protective equipment such as knee and elbow pads if you are not experienced. Have fun cruising on the trails. Exercise is medicine!

For more information on taking control of your health and well-being, please visit Strengthening the Forces at ***forces.gc.ca****, under the CAF Community tab, Health Services.*

DEFENCE ETHICS PROGRAMME / PROGRAMME D'ÉTHIQUE DE LA DÉFENSE

Defence Ethics Programme

ETHICALLY, WHAT WOULD YOU DO?

Getting what you want

Captain Sarah Finch-Ouellette, a new administration officer in the base commander's office, has been assigned to coordinate the Government of Canada Workplace Charitable Campaign (GCWCC), which raises funds for charities in the community.

The base commander has said to Capt Finch-Ouellette he would like to strongly encourage people to contribute to the campaign, and wants her to be innovative in bolstering participation in fundraising activities without compromising operational effectiveness.

Capt Finch-Ouellette reviewed DAOD 7021-4, Solicitations, Sponsorships and Donations; CANFORGEN 136/15 on Charities, Solicitation, Sponsorships, Donations and Acceptance of Gifts, Hospitality and Other Benefits; CANFORGEN 137/16 on Guidance for the Government of Canada Workplace Charitable Campaign 2016; the Provision of Services policy, and spoke to the base comptroller about some of her ideas. In particular, she proposes to use the new $2 million Fast Weapons Skills Simulator, charging $5 for any DND employee or CAF member and their spouse, and $2 per child.

Capt Finch-Ouellette thinks this would be a small price to pay to experience 15 minutes of simulated weapons firing – something people would certainly line up for. She is certain the concept would raise considerable funds for the campaign and meet the base commander's intent.

The base comptroller argues that this activity would not align with policy, because they would be charging a user's fee to use equipment that is not intended for that purpose. The base comptroller also notes that there are issues of liability to be examined by the Judge Advocate General's office and the activity would not likely be recommended.

Capt Finch-Ouellette nonetheless feels this is for a good cause, and since this equipment has been underutilized lately, there is nothing wrong with liberally interpreting these policies.

Attempting to convince the base comptroller to endorse the idea, she states "the base commander told me personally this is what he wants and we must make it happen."

From an ethical perspective, is CaptFinch-Ouellette abiding by the principles and values of the *DND and CF Code of Values and Ethics*?

Send reader feedback and suggestions for future scenarios to : Ethics-Ethique@ADM(RS) DEP@Ottawa-Hull.

Focus on Ethics 2016: TIME TO TALK

Mark your calendars – national ethics awareness activities for Defence Team personnel will be taking place from October 24-28.

Titled Focus on Ethics 2016: Time to Talk, the week-long event is presented by the Defence Ethics Programme (DEP).

Incorporating the theme of Towards Ethical Excellence in Defence, activities will include guest speakers and film presentations.

While the hub of activity will be in Ottawa, regional Defence Team personnel are encouraged to undertake their own events concurrently. The DEP is working collaboratively with their L1 partners, both in the National Capital Region and other regions, in order for them to showcase current initiatives and activities that support values and ethical practices in their day-to-day operations and workplaces.

Stay tuned for more details on this exciting event. For more information, contact Elizabeth Rajanayagam, event planner, at elizabeth.rajanayagam@forces.gc.ca or call 613-992-6160.

Healthy Workplace Tips for 2016

Have a Laugh

What you can do:
Humour is one of the most effective methods of coping with stress. Perhaps consider counter-productive workplace where people laughing have fun together and be more productive. So the next time you have a really good joke, don't be afraid to share (just, watch the borders of good taste, that is).

What a manager can do:
Encourage laughter and positive camaraderie among your team by finding the humour in various situations that may arise in the workplace, thereby easing tensions and reducing stress levels.

Breathe

What you can do:
Because we all do it all the time, breathing tends to be one of the most overlooked aspects of our health and well-being. Proper breathing contributes positively to both one's physical and psychological health. So the next time things get a little crazy in the office (and there's always a next time), remember to slow down and b-r-e-a-t-h-e.

What a manager can do:
Lead or organize a deep breathing demonstration and encourage your employees to take a few minutes out of their day to put this into practice.

Ask Questions

What you can do:
Uncertainty of any kind can be one of the leading causes of stress for many people. Try to minimize existing ambiguities in the workplace by approaching managers and colleagues, by asking questions when you have them, and by seeking clarification. You might find that others share your uncertainties and that your efforts to shine a light on a particular issue has also benefitted others.

What a manager can do:
Be a great communicator by putting yourself in the position of your employees and giving serious consideration to what information they would both require and appreciate.

Get to Know Each Other

What you can do:
Humans are by nature social creatures. Participating in social activities at work such as team lunches, walking clubs, or fundraising activities helps foster a greater sense of community and camaraderie in the workplace.

What a manager can do:
Plan and/or support various workplace social activities and actively congratulate employees who make the effort to humanize the workplace.

Have a Realistic To-Do List

What you can do:
Making to-do lists can be helpful, but make sure to keep yours reasonable and realistic. Long and unrealistic to-do lists can leave you overwhelmed, stressed-out, and discouraged, while conversely, what can help to foster a greater sense of job satisfaction and boost a sense of accomplishment

What a manager can do:
Model this behaviour for your employees by demonstrating good work-life balance.

Practice Recognition

What you can do:
Everyone appreciates a job well done as well as acknowledgment for good work. So whenever an employee, colleague, or manager does go above and beyond and produces stellar work, don't be afraid to say so. This way, you'll also be more likely to receive kudos yourself for a job well done.

What a manager can do:
Realize how powerful a simple "job well done" can be when it comes from a manager – take the time to genuinely acknowledge the great work being done by your employees.

Gratitude

What you can do:
The new and growing field of positive psychology has identified the practice of gratitude as one of the key contributors to achieving personal happiness. In the workplace, every job has aspects that are more fulfilling than others. Try to be grateful for those parts of your work that do provide you with meaning, joy and satisfaction.

What a manager can do:
Help your employees to identify those aspects of the work that bring them greater meaning and satisfaction as a passionate employee is a productive employee.

Remain Engaged

What you can do:
It's important to remain interested, stimulated, and engaged with one's work. Verify with your manager any available learning opportunities such as formal training, job shadowing, or mentorship programs to keep your work challenging and personally enriching.

What a manager can do:
Support your employees' efforts to learn, grow, and better themselves by approving training and other professional development opportunities whenever possible.

Say Please and Thank You

What you can do:
Whether communicating face-to-face or via email, remember to always include common greetings and pleasantries with your colleagues, such as "thank you" and "have a nice day." This contributes to a positive work environment where individuals tend to treat each other with courtesy and respect.

What a manager can do:
Create a Respect in the Workplace award for your team that you can all have fun with and that also encourages positive and cordial interactions.

Have a Say

What you can do:
Employees that have greater influence on their work as well as on their organization at large tend to report higher levels of workplace satisfaction. Discuss with your manager the different work options that are available to you as well as determining how your contributions feed into the broader organizational objectives.

What a manager can do:
We hear a lot about creating "flatter" organizations these days – well here is a great opportunity to do just that by allowing employees to exercise greater discretion over the work that they are trained and qualified to do.

Move and Stretch

What you can do:
Latest research shows that remaining seated at your desk for long periods of time can be harmful to your health. Find opportunities to get up and walk around, communicating with colleagues directly whenever possible, or just make sure to stretch your legs at least once every hour.

What a manager can do:
Encourage and celebrate employees who successfully manage their daily work schedules by fitting in healthy work breaks such as going to the gym or out for a walk.

LAST BUT NOT LEAST, a tip for managers and employees

Be an enthusiastic role model. This includes having a passion for work, being positive and friendly, and just generally setting an excellent example for all to follow.

CF HOUSING AGENCY CELEBRATES 20 YEARS

The Canadian Forces Housing Agency (CFHA) is celebrating its 20th anniversary and has received approximately $103 million, the largest investment since its creation.

More than $52 million has been used to renovate housing interiors and exteriors, as well as build new accommodations at bases and wings at Bagotville, Borden, Cold Lake, Comox, Esquimalt, Gagetown, Greenwood, Moose Jaw, Petawawa, and Shilo. In 2015-2016, 195 units were completely renovated, 56 new units were built, and the exteriors, kitchens, and bathrooms of other units were renovated.

Next year, the Agency plans to complete 56 similar projects as construction contracts have already all been assigned and work has started in some areas. At the end of the two-year program, the funds will have been used to improve around 10 per cent of CFHA accommodations.

Most military housing was built between 1948 and 1960 and is in need of modernization, so much work still remains to continue improving the accommodations under CFHA responsibility.

MORE GOOD NEWS

CFHA will receive an additional $50 million in investments for 2017-2018, making it possible for the Agency to offer modern accommodations to CAF members and their families in the future.

CFHA falls under the Assistant Deputy Minister (Infrastructure and Environment), and has been providing services and looking after Crown-managed accommodations since April 1996. ◆

In 2015–2016, 195 units were completely renovated, 56 new units were built, and the exteriors, kitchens, and bathrooms of other units were renovated.

150 search and rescue technicians participate in SAREX 2016

RCAF squadrons from across Canada participated in their annual National Search and Rescue Exercise, SAREX 2016, from September 18-24 in Yellowknife.

More than one third of the RCAF's 150 search and rescue technicians from eight squadrons across the country participated in the exercise. Others maintained a 24-hour standby at their respective squadrons around the country. Personnel from the Canadian Forces School of Search and Rescue in Comox, and the Joint Rescue Coordination Centres from Victoria, Trenton, and Halifax also took part.

The training brought together the CAF with civilian SAR communities, including the Civil Air Search and Rescue Association and other first responders, to standardize and evaluate skills.

The exercise focused on aerial and ground searches, medical responses, parachute accuracy, as well as land and marine rescues.

The primary SAR responsibility of the CAF is the provision of aeronautical SAR and the coordination of the aeronautical and maritime SAR system.

Search and rescue technician MCpl Sam Howard hoists a simulated casualty, Pte Jollane Laforce, to safety during the marine rescue portion of SAREX 2016.

PHOTO: Cpl Jeff Kennedy

TALKING ABOUT SUICIDE: WATCH FOR SIGNS

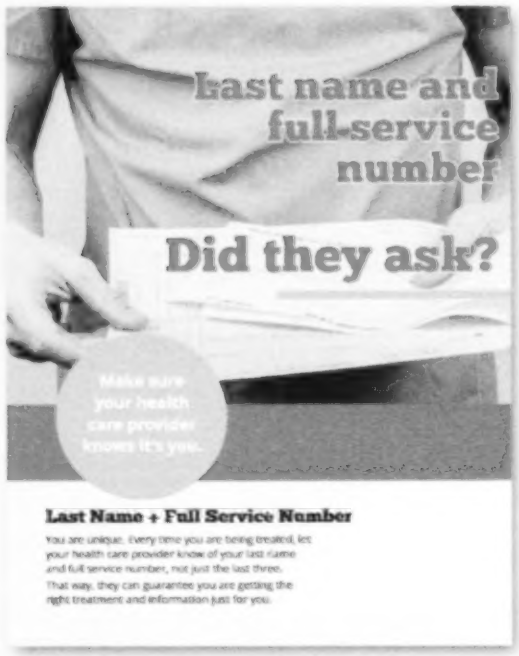
Though Mental Illness Awareness Week has ended we still need to be vigilant about the signs as on any given day, 11 people in Canada will die by suicide. Defence Team members are not immune to this issue.

One of the most powerful ways we can assist a person considering suicide is by intervening, and one of the most important ways we can intervene is to talk to people who we think are suffering.

Asking simple questions like: "How are you?" "You haven't seemed yourself lately, and I am really worried about you," or "Are you thinking of suicide or harming yourself?" can resonate deeply with a person in distress.

If the person answers in the affirmative, express your compassion, keeping in mind that they are in a terrible place if they are feeling suicidal. Explain that the next step is to seek help, and then call 9-1-1 immediately. Most people who are suicidal are feeling a loss of belonging, so it is essential that you remain with them and be supportive until medical services arrive.

To find out more about this subject, read the Talking about Suicide: Watch for Signs article on the Defence Team intranet at **intranet.mil.ca**.


Last name and full-service number
Did they ask?
Make sure your health care provider knows it's you.
Last Name + Full Service Number
You are unique. Every time you are being treated, let your health care provider know of your last name and full service number, not just the last three.
That way, they can guarantee you are getting the right treatment and information just for you.

76th Annual Battle of Britain Parade

PHOTO: Cpl Anna Wahl

Parade Commander Maj Peter Butzphal salutes during the 76th annual Battle of Britain Parade held September 18 at the Canada Aviation and Space Museum in Ottawa.

Wing Commander Simon Hulme of the RAF, accompanied by a cadet from 672 Royal Canadian Air Cadet Squadron, lays a wreath on behalf of the British High Commissioner to Canada during the Battle of Britain Parade at the Canada Aviation and Space Museum in Ottawa.

72ND ANNIVERSARY

OF OPERATION MARKET GARDEN

ARNHEM, THE NETHERLANDS
SEPTEMBER 17, 1944

Commemorative activities in Arnhem demonstrate the Canadian Armed Forces' commitment to remember the heroic actions of Canada and Allied countries in the liberation of The Netherlands during the Second World War.

70 CANADIAN ARMY PARATROOPERS

OVER 800 PARATROOPERS FROM 7 COUNTRIES INCLUDING:

- The Netherlands
- Canada
- Italy
- Belgium
- Germany
- United Kingdom
- Poland

Canadian Second World War soldier

LAID TO REST

A Second World War soldier whose remains were identified in May has been laid to rest with military honours by his unit, The Algonquin Regiment, in Adegem Canadian War Cemetery outside Bruges, Belgium.

The ceremony marked 72 years to the day that Private Kenneth Donald Duncanson lost his life during an attempt by The Algonquin Regiment to establish a bridgehead crossing of the Dérivation de la Lys and the Leopold Canal. Pte Duncanson, who was from Dutton, Ont., was 29 at the time of his death on September 14, 1944.

In September 1943 Pte Duncanson embarked for England and was assigned to No. 3 Canadian Infantry Reinforcement Unit. In preparation for the Normandy Invasion, he was transferred to The Algonquin Regiment on April 17, 1944, as a rifleman. His Regiment embarked for France on July 20, 1944, as part of the 10th Infantry Brigade, 4th Canadian Armoured Division.

Pte Duncanson participated in the fighting in the final phases of the Normandy Campaign, including the Falaise Pocket. He was involved in the pursuit of the German Army across the Seine and the Canadian Army's move north in the battles leading up to the Battle of the Scheldt in Belgium and The Netherlands. According to witness accounts, Pte Duncanson died on the morning of September 14, 1944, from wounds received during a German counterattack which forced the Algonquins to withdraw back across the Leopold Canal and the Dérivation de Lys.

Pte Duncanson's remains were found in a farmer's field near Mokstje, a hamlet in the municipality of Damme, Belgium, by a metal detector hobbyist on November 11, 2014. His remains were fully recovered by the Raakvlak Intercommunal Archaeological Service of Bruges, with assistance from DND's Casualty Identification Program, and support of the Commonwealth War Graves Commission, the Embassy of Canada to Belgium, and the Canadian Defence Attaché.

Adegem Canadian War Cemetery contains the graves of 848 Canadians, many of whom died in the fall of 1944 during the Liberation of Belgium and the Battle of the Scheldt. ◆

PHOTO: MCpl Pat Blanchard

Members of The Algonquin Regiment fold the Canadian Flag that covered the casket containing the remains of Pte Kenneth Duncanson during a burial ceremony at the Adegem Canadian War Cemetery, near Bruges, Belgium, on September 14.

ADM(S&T) PROVIDES **SOLUTIONS FOR DEFENCE PROJECTS**

Many Defence Team members are not aware of the collaboration and history the Assistant Deputy Minister (Science & Technology) has with the DND and the CAF.

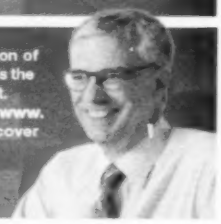
We would like to change this, by showcasing just a small portion of the great work that the ADM(S&T) groups are doing with various partners across the country. We are proud of these partnerships and look forward to what the future holds as we focus our energy on supporting government and departmental S&T priorities.

Committed to creating, developing, maintaining, and utilizing a technological and analytical foundation, ADM(S&T) is able to foresee and address future challenges, anticipate evolving threats, and provide support to the development of future Defence priorities.

The following pages show results of the hard work, dedication, and collaboration of ADM(S&T) employees across the agency and the department.

We also invite you to visit www.drdc-rddc.gc.ca to discover more DRDC projects.

– Dr. Marc Fortin
ADM(S&T)



New common competency dictionary developed for PERFORMANCE APPRAISALS

Most employees feel reassured when they have a clear sense of what their supervisors and managers expect from them in terms of performance, behaviours, and work attitudes.

Clearly laying out expectations can demonstrate an organization's commitment towards its employees, especially when this is accompanied by steps to ensure everyone has the competencies they need to help the organization reach its short- and long-term goals. In this sense, the CAF is no different than any other organization.

To help the CAF incorporate the Leadership Development Framework (LDF) into various human resources (HR) systems, Karen Rankin and her team from Director General Military Personnel Research and Analysis spent years researching and developing the Canadian Armed Forces Competency Dictionary (CAF CD).

"Two of [the Chief of Military Personnel's] Defence Renewal initiatives, namely the Canadian Forces Performance Appraisal System replacement project and the Individual Training and Education Modernization initiative, spurred the push to complete the development of a [competency dictionary] that would operationalize the LDF, which had been endorsed by Armed Forces Council as being the CAF's leadership doctrine," said Ms. Rankin.

The CAF CD comprises 19 competencies that operationalize the five meta-competencies of the LDF. The competencies are global, broad, and comprehensive characteristics such as: knowledge, skills, abilities, personality traits, and values that describe behaviors expected of all members. These competencies are linked to CAF strategic goals, informing members of CAF values and expectations, provide prescriptive descriptions of expected performance, and will replace the CF Performance Appraisal System's performance factors in the future Performance Appraisal and Talent Management System.

"Each of the competencies is directly related to behaviours of effective leaders, and by using them in performance appraisals, career progression, and succession management and planning will ensure the CAF has a high calibre of leaders," she said.

The CAF CD was designed in four phases. The first phase involved reviewing the competency dictionaries of other militaries and other Canadian government departments, which lead to an initial list of 17 competencies.

The second phase consisted of developing hundreds of behavioural indicators of effective performance for each competency through numerous interviews and focus groups. In the third phase, more than 4000 CAF members, both non-commissioned members (NCMs) and officers, participated in a survey that verified the importance and use of these competencies and behavioural indicators, providing thousands of suggestions on various elements of the CAF CD.

Lastly, the project included a thorough review of all gathered information, leading to a single CAF CD with two distinct components: one for NCMs and one for officers. Both reflect the same 19 competencies that represent the LDF.

The CAF CD will facilitate the department's transition to a competency-based HR system that supports personnel appraisal, career planning, and professional development. Plans are underway to have the CAF CD embedded into performance appraisals. Its versatility means it can be used to guide both career managers and members in identifying gaps between performance at a member's current rank and performance expectations at future ranks. ◆

DEFENCE RESEARCHES AUDIO WARNINGS IN THE COCKPIT

Personnel at Defence Research and Development Canada are studying the effectiveness of cockpit audio warnings. Specifically, they are asking whether the male or female voice is better at alerting pilots of either gender to hazards.

Auditory warnings are used in aircraft to alert the crew to hazards and their levels of danger. Failing to comply with a warning has led to aviation incidents and accidents.

Little is known about the effects of the acoustic parameters of verbal cockpit warnings on perceived urgency. Robert Arrabito, a defence scientist in the Human-Technology Interaction Group at Defence Research and Development Canada's Toronto Research Centre, investigated the effects of the speaker's gender and the voice style of verbal cockpit warnings on performance to help make warning messages distinct from speech on the flight deck.

In the past, it has been said that the female voice is easier to identify amid the flurry of radio chatter, but further research has proven otherwise. The increasing role of women in various aviation occupations in the CAF necessitated a re-examination of the gender of the speaker and intonation of warning messages to determine their applicability for male and female listeners. This information becomes important when you are talking about warnings that could avoid a catastrophic event.

Mr. Arrabito and his team had participants monitor the auditory channel and identify the verbal warning while performing a visual task. A male and female actor annunciated each warning word in three voice styles: monotone, urgent, and whisper. In the first of two experiments, the warning words were presented in a quiet background. In the second experiment, the warning words were presented in a background of speech babble which simulated cockpit radio communication.

The results of the first experiment showed that the monotone and urgent styles resulted in the fastest identification response time regardless of either the speaker or listener's gender. The second experiment showed the male speaker annunciating warnings in either the monotone or the urgent styles resulted in the largest proportion of correct responses, and the fastest identification response time regardless of the listener's gender.

"If there are no competing background sounds, it doesn't matter the sex of the talker annunciating the warnings," said Mr. Arrabito. "But when you start to introduce speech babble, the sex of the talker annunciating the warnings becomes important. Various warnings by males and females showed listeners responded better to the male voice than the female. But that was in one particular study, so we can't make a general assumption as to what voice type is better."

The conclusion of this study was that the effective use of speech parameters and word semantics can increase the importance of verbal cockpit warnings.

NON-VERBAL WARNINGS ALSO STUDIED

Mr. Arrabito also studied non-verbal warnings where he investigated pilots' judgement of the urgency of the warnings in the CH-146 Griffon helicopter.

"We got to fly every day during the study and experience what the pilot and co-pilot would hear on the flight deck, and how they respond to certain warnings," said Mr. Arrabito. "Some warnings weren't loud enough to get your attention, but interestingly enough, those warnings were meant to be very important, whereas another warning was quite loud and didn't have as near as much importance."

Are speech warnings better than non-speech warnings? Tested Griffon pilots told researchers that the warnings which sounded the most urgent to them were indeed the ones that had the least importance assigned to them.

The problem of conveying appropriate levels of urgency in non-speech warnings is also experienced in hospital operating rooms as anesthesiologists depend on auditory warnings to alert them to critical changes in the patient's physiological condition.

"They have the same problem: the sounds that convey the most urgent warning may not necessarily be the loudest," he said. "Non-verbal warnings are designed independently of each other. Lab studies have been carried out over many years, but in many instances non-verbal warnings are poorly designed because they do not connote the appropriate level of urgency."

Mr. Arrabito continues to conduct research on auditory displays in support of the CAF. "It's a lot of fun and I get to work with amazing individuals," he said. ◆

ADM(S&T) PROVIDES SOLUTIONS FOR DEFENCE PROJECTS

Neck pain research YIELDS SOLUTIONS

Neck pain is a common complaint among CH-146 Griffon helicopter pilots and flight engineers, and the CAF is looking for solutions to the problem.

Experts from Defence Research and Development Canada's (DRDC's) Toronto Research Centre and the Canadian Forces Environmental Medicine Establishment (CFEME) have studied this problem that can affect up to 75 per cent of Griffon aircrew, and are ready to provide solutions.

"The neck pain project will deliver credible advice on a variety of solutions to the CH-146 helicopter aircrew chronic neck pain problem that was first noted in the late 90s," said Dr. Philip Farrell, DRDC defence scientist and project lead. "So the team has taken a systematic approach to finding solutions, starting with a good understanding of the problem."

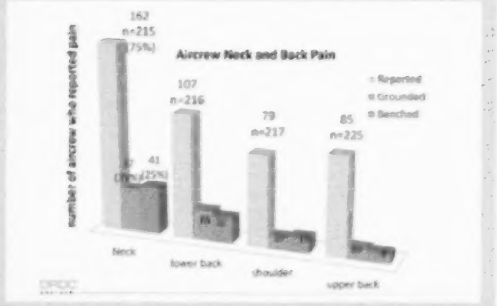
Neck muscle overuse, similar to repetitive strain injuries, has been identified as a potential underlying cause of chronic neck pain among aircrew. Aircrew wear heavy and unbalanced helmets that include night vision goggles, counterweights, and other helmet-mounted devices. Flight engineers lean out of the helicopter checking for obstructions, and pilots look down and to the side at the cockpit console over the course of a mission. Performing such tasks over multiple missions with a heavy, unbalanced, high profile helmet may lead to neck pain.

The solutions being assessed for their ability to reduce neck pain include better task postures, task sharing, smart scheduling, proper helmet fit, exercise, education, lower profile helmet systems, helmet support devices, futuristic control and display concepts, and passive and active seat cushions.

"We've discovered that there is no single silver bullet that will solve this problem, but rather carefully planned integration of two or more of these mitigating solutions will likely reduce the risk of developing or exacerbating chronic aircrew neck pain," said Dr. Farrell.

The DRDC team has provided credible advice on six of these solutions that the CAF plans to implement, and by the time the project ends in 2017-18 they will have provided stakeholders with advice on all 10 solutions.

"This neck pain project is also of great interest to NATO countries and beyond," said Dr. Farrell who chairs a NATO research task group on aircrew neck pain. "This is not just an RCAF problem—it's a worldwide problem, and so it's nice to know that DRDC, CFEME and Canada are world leaders in finding solutions to improving the health and safety of our aircrew."



PROMISING RESULTS

in DRDC study on traumatic brain injury

Defence Research and Development Canada (DRDC) scientists are analyzing specific proteins in rats that help to measure the effects of traumatic injury on the brain.

Primary blast-induced mild traumatic brain injury (PbTBI) is an important topic of study because exposure to a blast is a potential hazard for many CAF members, both on exercise and during operations. Treating brain injury is a delicate but important task, and the effects of different types of trauma make this field extremely complex.

DRDC has a Blast Injury Program at the lab in the Suffield Research Centre in Alberta. The defence science teams there are learning more about the effects of primary blast waves on the brain.

"Primary blast consists of the pressure wave produced as the gases expand away from the detonation," explains Yushan Wang, one of the defence scientists leading the project. "This shock wave is characterized by an almost instantaneous increase in pressure, which lasts a few thousandths of a second. It is thought that at far-field distances from the blast, where you are unlikely to be thrown or hit by projectiles, PbTBI may be caused by exposure to the blast wave."

The long-term goal is to find a way to diagnose and treat primary blast-induced traumatic brain injury as early as possible. To do this, defence scientists are coming at the problem from all angles; behavioral, biochemical, molecular, and immunohistochemical testing are all part of the study.

Immunohistochemistry uses antibodies and a contrast-increasing microscope to study particular proteins in tissues that have faced stressors. The increase or decrease in the levels of these proteins over time can help to demonstrate what happens in the brain after being exposed to a primary blast.

The experiment consists of anaesthetizing experimental animals and exposing them to primary blast waves, the pressure of which is tightly controlled by the scientists. After exposure, the testing begins.

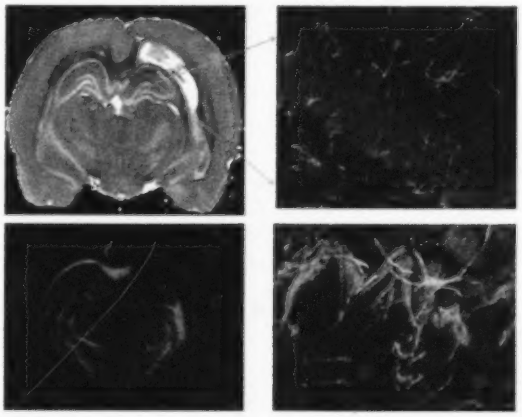
The rats were subjected to a number of behaviour tests designed to assess learning and memory, anxiety levels, mobility and balance ability—all of which are relevant to human brain injuries. Along with this, scientists used immunohistochemistry to look for changes in the brain itself.

The combination of these two techniques allows for more nuanced data on the actual effects of a primary blast on the brain. Noting the behavioral changes allows for a record of visible symptoms over time, and simultaneously analyzing the molecular activity shows researchers what's going on in the brain. This method ideally will allow scientists to associate particular molecular patterns with specific symptoms.

By acquiring a better understanding of how the brain is affected by a primary blast, it's hoped these studies will lead to new methods of treatment. Further research and experiments will be required – there is a long way to go between testing on animals and developing results applicable to humans.

"DRDC scientists continue to provide tremendous research and support to help protect members of the Canadian Armed Forces," says the CAF Surgeon General, Brigadier-General Hugh MacKay. "Their creative research approach will bring us a far better understanding of the potential effects of blast exposure."

Although there is still a long road ahead, the study has so far cultivated promising results, which may one day benefit all Canadians. ◆



Colourful brain scans being studied by DRDC scientists.

GENETIC SEQUENCING COULD HELP DIAGNOSE PTSD

Defence research scientists are developing a study on how post-traumatic stress disorder (PTSD) may be linked to certain genes which may help with diagnosis and treatment.

Every person has a particular set of genes that act like recipes for a variety of traits. Some human genes are different depending on the person. These are the genes that make us unique, determining everything from eye colour to height to brain chemistry. While genomics — the study of genes and what they do — isn't a particularly new field, it is still relatively unexplored, and the data is evolving as scientists come up with new ways of looking at the genome.

Dr. Cathy Boscarino at Defence Research and Development Canada's Toronto Research Centre led a study aimed to associate a specific gene or group of genes with symptoms of PTSD. The goal was to map out whether it was possible to see or track the development of symptoms of PTSD in the genome.

"Our goal was to redefine the development of PTSD from descriptive-based signs and symptoms to a platform based on the underlying molecular causes," said Dr. Boscarino. "The preliminary results, albeit additional studies and further refinement of the results are necessary, provide a proof-of-principle for the diagnostic utility of blood-based gene expression profiles for tracking the development of PTSD in soldiers returning from tour."

The study tracked CAF members for one year following a tour in Afghanistan, including both those who had exposure to combat and those who had not. Soldiers who consented to participate completed questionnaires and provided blood samples approximately every four months. The questionnaires were designed to assess the incidence of PTSD symptoms. Blood was tested using a method of next-generation genetic sequencing called RNA sequencing to identify and record significant genes related to what was found on the questionnaires. Through these tests, a handful of genes were found in those expressing symptoms of PTSD, however, further validation is required.

While this is certainly a breakthrough discovery, this is only the first of many studies to be refined before these results can be considered entirely valid or actionable. Nevertheless, these results have incredible implications for the future of PTSD diagnostics and treatment. This could give scientists information to track PTSD and intervene early to provide crucial support and therapy.

ADM(S&T) PROVIDES **SOLUTIONS FOR DEFENCE PROJECTS**

Meeting SOLDIERS' NEEDS

'Responsive to the needs of our troops' is more than just the motto at the Munitions Experimental Test Centre (METC) in Valcartier, Que.

As part of the Quality Engineering Test Establishment (QETE), a unit under the Assistant Deputy Minister (Materiel), METC's personnel view meeting soldiers' needs as more than just a motto. In fact, for personnel from both METC and their affiliated organization, Defence Research and Development Canada (DRDC), this attitude captures the underlying motivation for all that they do.

"All of our work—in collaboration with numerous engineers and technologists from QETE as well as researchers from DRDC in Valcartier—is aimed at making work safer for Canadian Armed Forces members. Both civilians and military come to work with this objective in mind," Major Dave Michaud, director of operations at the centre.

Maj Michaud notes that many of the tests conducted in METC laboratories and on testing sites at CFB Valcartier come from DRDC.

For example, the combined METC and DRDC team recently took part in a qualification program for C-19 ammunition. The C-19, a 308-calibre (7.62 mm) rifle is the new weapon for the Canadian Rangers.

The team's primary assignment was to develop and test an assessment method adapted to the specific needs of the Canadian Rangers, as well as to determine the weapon's lethality.

"Selecting the right munitions type to use involves a lot more than just firing at a target," said Master Warrant Officer Bob Gagné, a weapons technician. The ballistic properties of the ammunition, impact speeds, and attack angles for the target must also be considered.

"When the CAF adopts a new weapon or new munitions, it requires a wide range of tests, including confirmation that we will still meet *Article 36* of the *Geneva Convention*, which means even military attorneys get their say when it comes to resorting to lethal force against an enemy," said MWO Gagné.

As for the primary use of the C-19 – hunting and protection from large animals – the team created a target that took extreme conditions into account.

"Since our Rangers could be confronted by a polar bear during their work, we used synthetic materials to replicate the various body parts of this large mammal in order to complete our objective," said MWO Gagné.

During complex weapons testing programs such as this, the METC and DRDC have access to various indoor and outdoor firing ranges, including a unique 250-metre aeroballistic range to conduct projectile ballistics studies and precision testing while being sheltered from hazardous winds.

In order to demonstrate the functioning of weapons systems at extreme temperatures, the METC created a mobile indoor firing range for shooting at temperatures between -45°C and 75°C. These tests—combined with other environmental tests that measure vibration, impacts, submersion, and humidity—allow confirmation of proper functioning for weapons and munitions used all over the world.

According to Robert Landrigan, one of the five test managers at the METC, the best part the job is the constant striving to improve the safety and well-being of CAF members.

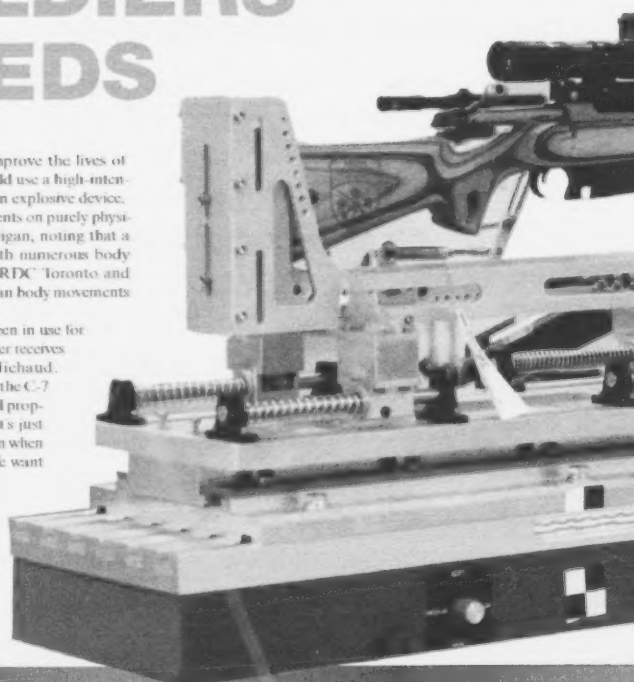
"Having served in uniform for over 35 years myself, I understand how vital my work here really is," he said. "Our staff enjoys an excellent relationship of mutual confidence with DRDC scientists. Their knowledge, combined with our expertise, enables us to accelerate research. Everyone can offer input to ensure that everything goes smoothly, with no snags."

As an example of this relationship, a team of scientists from DRDC supported by the METC successfully ran tests to confirm the new medium support vehicle fleet meets defined armour standards.

According to Mr. Landrigan, the tests conducted at Valcartier are diverse and include tests on Kevlar undergarments; whether cabinets used by technicians for search and rescue can store munitions and pyrotechnics used during routine operations; and the decibels emitted by different types of portable weapon silencers. Work is currently being conducted to improve the lives of minesweeping personnel who could use a high-intensity laser to remotely deactivate an explosive device.

"We can also conduct experiments on purely physiological aspects," said Mr. Landrigan, noting that a group of soldiers were fitted with numerous body sensors as part of a study for DRDC Toronto and DRDC Valcartier to analyze human body movements when firing light weapons.

"Just because a weapon has been in use for a long time doesn't mean it no longer receives our attention," said Maj Michaud. "For instance, we are going to test the C-7 again in order to push its limits and properly determine its capabilities. Let's just say that we know it much better than when it first arrived in our inventory. We want to do everything we can to ensure the safety and well-being of our service men and women." ♣



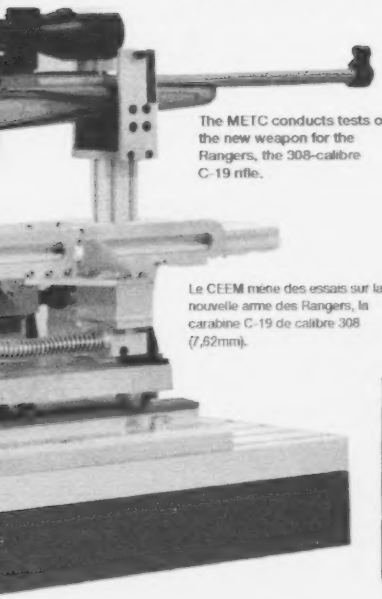
COLT C-19, C19 RANGER RIFLE / LA COLT C-19, CARABINE DES RANGERS

Type / Type	**Bolt action rifle / Carabine à verrou**
Place of origin / Lieu de conception	**Finland / Finlande**
SERVICE HISTORY / UTILISATION	
In service / Entrée en service	**2016**
Used by / Utilisée par	**Canada**
PRODUCTION HISTORY / PRODUCTION	
Designer / Concepteur	**SAKO**
Manufacturer / Fabricant	**Colt Canada**
Produced / Année de production	**2015**
Number built / Quantité produite	**10 200 (2016)**
SPECIFICATIONS / CARACTÉRISTIQUES	
Weight / Poids	**4.7 kg (10 lb) / 4,7 kg**
Length / Longueur	**102 cm (40.2 in) / 102 cm**
Barrel length / Longueur du canon	**51 cm (20.1 in) / 51 cm**
Cartridge / Cartouche	**7.62×51mm NATO 10-round / 7,62 × 51 mm NATO 10**
Action / Mécanisme	**bolt action; two locking lug / mécanisme à verrou; deux tenons de verrouillage**
Rate of fire / Cadence de tir	**30 rounds/min / 30 projectiles à la minute**
Muzzle velocity / Vitesse initiale	**790 m/s (2437 ft/s) / 790 m à la seconde**
Effective firing range / Portée efficace	**600 m (660 yd) / 600 m**
Feed system / Système d'alimentation	**10-round detachable box / Chargeur de 10 balles amovible**

SOURCE: en.wikipedia.org/wiki/Colt_C-19 / SOURCE : en.wikipedia.org/wiki/Colt_C-19 (traduction)

LE SMA(S & T) **SOUTIENT LES PROJETS DE LA DÉFENSE**

Répondre aux besoins des soldats



The METC conducts tests on the new weapon for the Rangers, the 308-calibre C-19 rifle.

Le CEEM mène des essais sur la nouvelle arme des Rangers, la carabine C-19 de calibre 308 (7,62mm).

« Répondre aux besoins de soldats » est bien plus que la devise du Centre d'essais et d'expérimentation en munitions (CEEM), à Valcartier, au Québec.

Le personnel du CEEM, qui fait partie du Centre d'essais technique de la qualité (CETQ), unité relevant du sous-ministre adjoint (Matériels), estime que répondre aux besoins des soldats représente beaucoup plus qu'une devise. À vrai dire, pour les membres du personnel du CEEM et d'un autre organisme semblable, à savoir Recherche et développement pour la défense Canada (RDDC), répondre aux besoins des soldats constitue la motivation première qui les anime au travail.

« Tout ce que nous faisons de concert avec de nombreux ingénieurs et technologues du CETQ, ainsi que des chercheurs de RDDC Valcartier, vise à rendre le travail des militaires canadiens moins dangereux. Civils et militaires ont tous cet objectif lorsqu'ils entament leur travail », affirme le major Dave Michaud, responsable des opérations du centre.

Le Maj Michaud indique qu'une très grande partie des tests effectués dans les laboratoires du CEEM et à ses sites d'essais provient de RDDC. Par exemple, tout récemment, une équipe du CEEM et de RDDC a participé au programme d'évaluation des munitions de la nouvelle arme des Rangers canadiens, soit la C-19, une carabine de calibre 308 (7,62 mm). L'équipe avait le mandat d'élaborer et d'éprouver une méthodologie d'évaluation adaptée aux besoins particuliers des Rangers canadiens, en plus de déterminer l'efficacité de l'arme.

« Choisir le type de munition à utiliser implique beaucoup plus que tirer sur une cible. Il faut connaître les caractéristiques balistiques des munitions, leur vitesse d'impact et les angles d'attaque de la cible », dit l'adjudant-maître Bob Gagné, technicien en armement. « De plus, lorsque les FAC adoptent une nouvelle arme ou de nouvelles munitions, une large gamme d'essais sont nécessaires, dont confirmer que nous respectons toujours l'article 36 de la *Convention de Genève*, qui fait en sorte que même les avocats militaires ont leur mot à dire lorsque vient le temps de recourir à un moyen létal contre un ennemi. »

Pour ce qui est de l'utilité principale de la C-19, soit la chasse et la défense contre les gros animaux, l'équipe a créé une cible qui tenait compte d'une situation extrême. « Puisque nos Rangers peuvent faire face à un ours polaire lors de leur travail, nous avons reproduit, à l'aide de matériaux synthétiques, les différentes parties du corps de ce gros mammifère pour remplir notre mandat », explique l'Adjum Gagné.

Lors de programmes complexes d'essais d'armes, le CEEM et RDDC ont accès à différents champs de tir intérieurs et extérieurs, dont un unique corridor aérobalistique de 250 mètres qui permet d'étudier la balistique des projectiles et de faire des essais de précision à l'abri de vents nuisibles.

Afin d'éprouver le fonctionnement de systèmes d'armes à des températures extrêmes, le CEEM a créé une salle de tir mobile où l'on peut effectuer des tirs à des températures pouvant osciller entre -45 °C à 75 °C. Ces tests, combinés à d'autres tests environnementaux qui servent à mesurer la vibration, les chocs, l'immersion et l'humidité, permettent de confirmer le bon fonctionnement d'armes et de munitions qui peuvent servir partout dans le monde.

Selon Robert Landrigan, un des cinq directeurs d'essais du CEEM, le plus bel aspect du travail, c'est qu'il vise toujours à améliorer le bien-être et la sécurité des militaires canadiens. « Ayant porté moi-même l'uniforme pendant plus de 35 ans, je sais à quel point mon travail ici est important. De plus, un lien de confiance tout à fait exceptionnel unit notre personnel et les scientifiques de RDDC. Leurs connaissances, conjuguées à notre expertise, permettent d'accélérer les recherches. Tout le monde peut y aller de suggestions afin que tout se déroule rondement et sans anicroche. » À titre d'exemple de cette relation, une équipe de scientifiques de RDDC, soutenue par le CEEM, a mené des tests afin de confirmer que la nouvelle flotte de véhicules de soutien moyen répond bel et bien aux normes de blindage établies.

Selon M. Landrigan, les tests qui ont lieu à Valcartier sont diversifiés. En voici quelques exemples : évaluer des sous-vêtements faits de kevlar, déterminer si les classeurs utilisés par les techniciens en recherche et en sauvetage peuvent servir à entreposer des munitions et des pièces pyrotechniques utilisées lors d'opérations quotidiennes et mesurer les décibels émis par différents types de silencieux d'armes portatives. Par ailleurs, l'équipe travaille actuellement à simplifier la vie des démineurs grâce à un laser à haute intensité qui permettra de désamorcer, à distance, un engin explosif.

« L'aspect purement physiologique fait aussi partie des expériences que nous pouvons réaliser », dit M. Landrigan, ajoutant que, dans le cadre d'une étude menée par RDDC Toronto et Valcartier, on a équipé des soldats de nombreux capteurs afin d'analyser les mouvements du corps lors de tirs au moyen d'une arme légère.

« Aussi, ce n'est pas parce qu'une arme sert depuis longtemps qu'elle ne suscite plus notre attention. À titre d'exemple, nous testerons la C-7 de nouveau afin de la pousser à ses limites et de bien déterminer ses capacités. Disons juste que nous la connaissons beaucoup mieux que lors de son arrivée dans notre stock. Nous souhaitons tout faire pour assurer le mieux-être et la sécurité de nos militaires », conclut le Maj Michaud. ◆

A vehicle is driven over an explosive charge to verify its explosion resistance. These tests enable Defence scientists to improve safety for our soldiers.

On fait rouler un véhicule sur une charge explosive afin d'éprouver sa capacité de supporter une explosion. C'est en procédant à de tels tests que les scientifiques de la Défense réussissent à améliorer la sécurité de nos soldats.

The aerobalistic range, used by the METC to determine the effectiveness of various weapons and munitions.

Le corridor aérobalistique dont se sert le CEEM afin de déterminer l'efficacité de différentes armes et munitions.